3.10 Water Quality and Storm Water Runoff

3.10.1 Regulatory Setting

3.10.1.1 Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.), from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the State that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE). (Refer to Section 3.18, Wetlands and Other Waters, for further discussion regarding Section 404.)

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

3.10.1.2 State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state- listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

3.10.1.3 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollutant Discharge Elimination System (NPDES) Program**
  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water dischargers, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. This Caltrans' MS4 permit covers all Caltrans rights of way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  Caltrans' MS4 Permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1. The permit has three basic requirements:

  1. Caltrans must comply with the requirements of the Construction General Permit (see below);
  2. Caltrans must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and
  3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the Maximum Extent Practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

  To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including

the selection and implementation of BMPs. The MCP project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction, aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with Caltrans Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

County of Riverside NPDES Permit

The County of Riverside, the City of San Jacinto, and the City of Perris are co-permittees under the NPDES Permit for Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County with the Santa Ana

Region (Order No. R8-2010-003, NPDES No. CAS618033). The NPDES permit prohibits discharges, sets limits on pollutants being discharged into receiving waters, and requires implementation of technology-based standards.

Under the NPDES permit, the co-permittees are responsible for the management of storm drain systems within their jurisdiction. The co-permittees are required to implement management programs, monitoring programs, implementation plans, and all BMPs outlined in the Drainage Area Management Plan and to take any other actions that may be necessary to protect water quality to the maximum extent practicable.

Areas of the MCP project outside of Caltrans right of way would be subject to the County NPDES permit requirements. If, after construction, Caltrans takes ownership of the MCP project, operation of the MCP facility would be subject to the requirements of the Caltrans NPDES permit.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

3.10.2 Affected Environment

The information in this section is based on the *Water Quality Assessment Report* (August 2011).

3.10.2.1 Surface Water

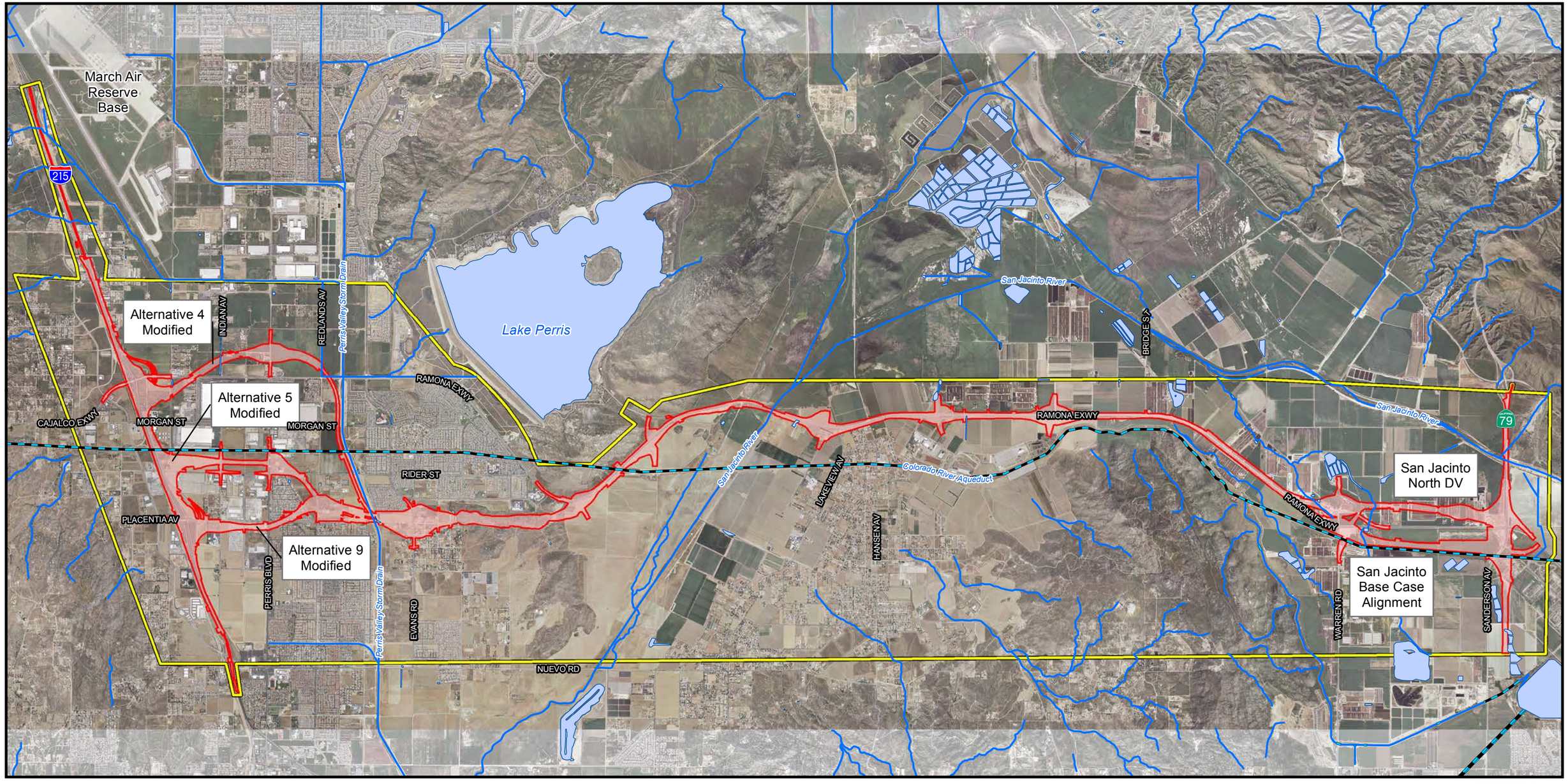
The project site is located in Riverside County within the San Jacinto River Watershed. Although the United States Environmental Protection Agency (EPA) considers the Santa Ana River and the San Jacinto River Watersheds to be separate, for some regulatory purposes (such as NPDES permits, Drainage Area Management Plans, etc.), the San Jacinto River Watershed is considered a sub-watershed of the Santa Ana River Watershed.

The San Jacinto River Watershed is divided into Hydrologic Areas that are subdivided into Hydrologic Subareas. The purpose of hydrologic boundaries is to designate the area within a larger watershed that drains in a particular direction to a particular water body. The project area lies within the Perris Valley, Lakeview, and Hemet Hydrologic Subareas of the Perris Hydrologic Area and the Gilman Hot Springs Hydrologic Subarea of the San Jacinto Hydrologic Area (see previous Figure 3.9.1).

Surface waters are depicted in Figure 3.10.1. Within the project area, the majority of runoff is conveyed to Reach 4 of the San Jacinto River (Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8) or the Perris Valley Storm Drain, which is a tributary to the San Jacinto River. The eastern portion of the project area in the vicinity of State Route 79 (SR-79) drains to Reach 5 of the San Jacinto River (North-South Mid-Section Line, T4S/R1W-S8 to confluence with Poppet Creek). Reach 3 of the San Jacinto River (Canyon Lake to Nuevo Road) is just downstream (south) of the project area. The San Jacinto River discharges into Canyon Lake and ultimately into Lake Elsinore. The San Jacinto River generally flows east to west within the project area.

The San Jacinto River is a tributary of the Santa Ana River, although the flow from the San Jacinto River usually terminates at Lake Elsinore. On rare occasions, Lake Elsinore overflows into Temescal Creek, which ultimately flows to the Santa Ana River. During dry periods, the San Jacinto River is essentially dry, contributing little or no flow to Canyon Lake.

Typical flows range from 16 cubic feet per second in the winter to less than 1 cubic foot per second during the dry season. The San Jacinto River has a drainage area of over 720 square miles (sq mi) and it extends about 59 mi from its headwaters in the San Jacinto Mountains to where it drains into Canyon Lake and then into Lake Elsinore.



LEGEND

- Study Area
- Limits of Proposed Improvements (All Alternatives and Design Variations)
- Lake / Pond / Reservoir
- Surface Waters
- Colorado River Aqueduct

FIGURE 3.10.1

SOURCE: Jacobs Engineering (02/2011); Thomas Brothers (2010); Eagle Aerial (03/2010); National Hydrography Dataset (2/2011)

0 0.5 1 Miles

Surface Waters

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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Also within the San Jacinto River Watershed, north of the project alignment in the western project area, is Lake Perris, a 2,320 ac man-made reservoir that marks the end of the State Water Project aqueduct system.

Surface Water Beneficial Uses

Beneficial uses of water are defined in the Santa Ana RWQCB's *Santa Ana River Basin Water Quality Control Plan* (Basin Plan) (1995, updated February 2008) as the various ways that water can be used for the benefit of people and/or wildlife. Examples of beneficial uses include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Industrial Process Supply (PROC), Groundwater Recharge (GWR), Water Contact Recreation (REC-1), Noncontact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), and Wildlife Habitat (WILD).

Beneficial uses of surface waters for the San Jacinto River, Canyon Lake, Lake Elsinore, and Lake Perris are shown in Table 3.10.A.

Table 3.10.A Surface Water Beneficial Uses

	MUN	AGR	IND	PROC	GWR	REC 1	REC 2	WARM	COLD	WILD
San Jacinto River										
Reach 1 – Lake Elsinore to Canyon Lake	+	|			|	|	|	|		|
Reach 2 – Canyon Lake	X	X			X	X	X	X		X
Reach 3 – Canyon Lake to Nuevo Road	+	|			|	|	|	|		|
Reach 4 – Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8	+	|			|	|	|	|		|
Reach 5 – North-South Mid-Section Line, T4S/ R1W-S8, to Confluence with Poppet Creek	+	|			|	|	|	|		|
Lake Elsinore	+					X	X	X		X
Lake Perris	X	X	X	X	X	X	X	X	X	

Source: *Water Quality Assessment Report* (August 2011).

| = Intermittent Beneficial Use
+ = Excepted from MUN (water bodies not designated because they meet certain exception criteria)
AGR = Agricultural Water Supply
COLD = Cold Freshwater Habitat
GWR = Groundwater Recharge
IND = Industrial Water Supply
MUN = Municipal Water Supply
PROC = Industrial Process Supply
REC-1 = Contact Water Recreation
REC-2 = Noncontact Water Recreation
WARM = Warm Freshwater Habitat
WILD = Wildlife Habitat
X = Present or Potential Beneficial Use

Surface Water Quality Objectives

As required by the California Porter-Cologne Water Quality Control Act, the Santa Ana RWQCB has developed water quality objectives for waters within its jurisdiction to protect the beneficial uses of those waters and has published them in the Basin Plan. The Basin Plan also establishes implementation programs to achieve these water

quality objectives and requires monitoring to evaluate the effectiveness of these programs. Water quality objectives must comply with the state antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are not unreasonably affected.

Surface water quality objectives designated in the Basin Plan for all inland waters are listed in Table 3.10.B. Site-specific Water Quality Objectives established in the Basin Plan for Reaches 3, 4, and 5 of the San Jacinto River, Canyon Lake, Lake Elsinore, and Lake Perris are listed in Table 3.10.C.

In addition, because California had not established a complete list of acceptable water quality criteria for toxic pollutants, EPA Region IX established numeric water quality criteria for toxic constituents in the form of the California Toxics Rule.

303(d) List of Impaired Waters

The State Water Resources Control Board approved the 2010 Integrated Report (CWA Section 303(d) List/305(b)) on August 4, 2010. On November 12, 2010, the EPA approved the 2010 California 303(d) List of Water Quality Limited Segments.

San Jacinto River and Lake Perris are not listed on the 2010 303(d) list. Canyon Lake is listed as impaired for nutrients and pathogens. Lake Elsinore is listed as impaired for nutrients, organic enrichment/low dissolved oxygen, polychlorinated biphenyls, sediment toxicity, and unknown toxicity.

Total Maximum Daily Loads must be prepared by the Santa Ana RWQCB for impairments based on priority level. The Santa Ana RWQCB has established Total Maximum Daily Loads for Lake Elsinore for nutrients and low dissolved oxygen and a Total Maximum Daily Load for Canyon Lake for nutrients. The nutrient Total Maximum Daily Load numeric target to be attained by 2020 is an annual average of 0.1 milligrams per liter for total phosphorus and 0.75 milligrams per liter for total nitrogen. In addition, a Total Maximum Daily Load is currently under development for bacterial indicators for Canyon Lake.

3.10.2.2 Groundwater Hydrology

As designated by the Santa Ana RWQCB, the project site is located in the Perris-North, Lakeview/Hemet-North, and San Jacinto-Upper Pressure Groundwater Management Zones of the San Jacinto River Basin as shown on Figure 3.10.2.

Table 3.10.B Surface Water Quality Objectives for Inland Surface Waters

Constituent	Concentration	Receiving Waters
Algae	Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters.	All inland surface waters
Ammonia	Varies based on pH and temperature. Ranges from 0.004 to 0.0224 mg/L unionized ammonia and 0.05 to 1.49 mg/L total ammonia.	COLD beneficial use designation
	Varies based on pH and temperature. Ranges from 0.0006 to 0.0530 mg/L unionized ammonia and 0.119 to 2.27 mg/L total ammonia.	WARM beneficial use designation
Boron	Shall not exceed 0.75 mg/L as a result of controllable water quality factors.	All inland surface waters
Chlorine (residual)	Chlorine residual in wastewater discharged to inland surface waters shall not exceed 0.1 mg/L.	All inland surface waters
Coliform (fecal)	Logarithm means less than 200 organisms per 100 mL based on five or more samples per 30-day period and not more than 10% of the samples exceed 400 organisms per 100 mL for any 30-day period.	REC 1 beneficial use designation
	Logarithm means less than 2,000 organisms per 100 mL based on five or more samples per 30-day period and not more than 10% of the samples exceed 4,000 organisms per 100 mL for any 30-day period.	REC 2 beneficial use designation
Coliform (total)	Not to exceed 100 organisms per 100 mL.	MUN beneficial use designation
Color	Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses. The natural color of fish, shellfish, or other inland surface water resources used for human consumption shall not be impaired.	All inland surface waters
Floatables	Waste discharges shall not contain floating materials, including solids, liquids, foam, or scum, that cause a nuisance or adversely affect beneficial uses.	All inland surface waters
Fluoride	Shall not exceed 0.7 to 1.2 mg/L as a result of controllable water quality factors depending on air temperature (refer to Basin Plan).	MUN beneficial use designation
Metals	Varies based on hardness.	All inland surface waters
Methylene blue-activated substances	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Nitrate	Shall not exceed 45 mg/L as NO_3 or 10 mg/L as N.	MUN beneficial use designation
Oil and grease	Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that result in a visible film or in coating objects in the water or that cause a nuisance or adversely affect beneficial uses.	All inland surface waters
Oxygen (dissolved)	Shall not be depressed below 5 mg/L as a result of controllable water quality factors.	WARM beneficial use designation
	Shall not be depressed below 6 mg/L as a result of controllable water quality factors.	COLD beneficial use designation
	Waste discharges shall not cause the median dissolved oxygen concentration to fall below 85% of saturation or the 95th percentile concentration or fall below 75% of saturation within a 30-day period.	All inland surface waters
pH	Shall not be raised above 8.5 or depressed below 6.5 as a result of controllable water quality factors.	All inland surface waters
Radioactivity	Shall not exceed the California Code of Regulations, Title 22, standards of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha, 20,000 pCi/L for tritium, 8 pCi/L for strontium-90, 50 pCi/L for gross beta, and 20 pCi/L for uranium.	MUN beneficial use designation
Solids (suspended and settleable)	Shall not cause nuisance or adversely affect beneficial uses.	All inland surface waters
Sulfides	Shall not be increased as a result of controllable water quality factors.	All inland surface waters
Surfactants	Waste discharges shall not contain concentrations of surfactants that result in foam in the course of flow or uses of the receiving water or that adversely affect aquatic life.	All inland surface waters
Taste and odor	Shall not contain taste- or odor-producing substances at concentrations that cause a nuisance or adversely affect beneficial uses.	All inland surface waters
Temperature	Shall not be raised above 90°F June through October or above 78°F during the rest of the year as a result of controllable water quality factors.	WARM beneficial use designation
	Shall not be increased by more than 5°F as a result of controllable water quality factors.	COLD beneficial use designation

Table 3.10.B Surface Water Quality Objectives for Inland Surface Waters

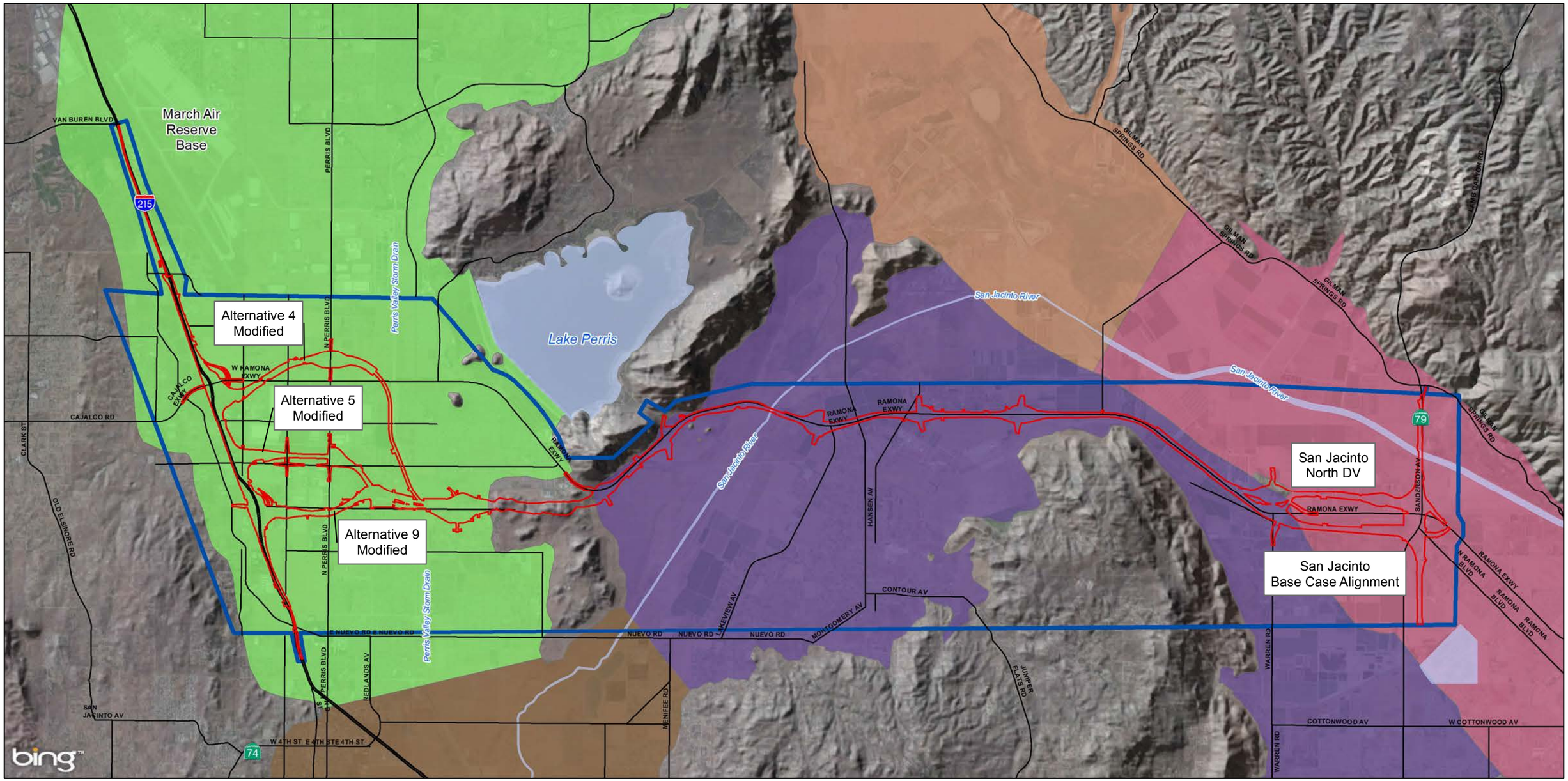
Constituent	Concentration	Receiving Waters
Toxic substances	Shall not be discharged at levels that will bioaccumulate in aquatic resources to levels that are harmful to human health. Concentrations of toxic pollutants in the water column, sediments, or biota shall not adversely affect beneficial uses.	All inland surface waters
Turbidity	Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 NTU. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10%.	All inland surface waters

Source: *Water Quality Assessment Report (*August 2011).
°F = degrees Fahrenheit
Basin Plan = *Water Quality Control Plan – Santa Ana River Basin*
COLD = Cold Freshwater Habitat
JTU = Jackson turbidity units
mg/L = milligrams per liter
mL = milliliters
MUN = Municipal and Domestic Water Supply
N = nitrogen
NO_3 = nitrate
NTU = nephelometric turbidity units
pCi/L = picocuries per liter
pH = percentage of hydrogen
REC 1 = Contact Water Recreation
REC 2 = Noncontact Water Recreation
WARM = Warm Freshwater Habitat

Table 3.10.C Site-Specific Water Quality Objectives

Inland Surface Stream	Total Dissolved Solids	Hardness	Sodium	Chloride	Total Inorganic Nitrogen	Sulfate	Chemical Oxygen Demand
San Jacinto River							
Reach 1 – Lake Elsinore to Canyon Lake	450	260	50	65	3	60	15
Reach 2 – Canyon Lake	700	325	100	90	8	290	N/A
Reach 3 – Canyon Lake to Nuevo Road	820	400	N/A	250	6	N/A	15
Reach 4 – Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8	500	220	75	125	5	65	N/A
Reach 5 – to North-South Mid-Section Line, T4S/R1W-S8, to Confluence with Poppet Creek	300	140	30	25	3	40	12
Lake Elsinore	2000	N/A	N/A	N/A	1.5	N/A	N/A
Lake Perris	220	110	50	55	1	45	N/A

Source: *Water Quality Assessment Report* (August 2011).
N/A = Not Applicable



LEGEND

- MCP Study Area
- Limits of Proposed Improvements (All Alternatives and Design Variations)

Groundwater Management Zones

- Lakeview/Hemet-North
- Perris-North
- Perris-South
- San Jacinto-Lower Pressure
- San Jacinto-Upper Pressure

FIGURE 3.10.2

SOURCE: Jacobs Engineering (02/2011); SAWPA (2/2011); Thomas Brothers (2010); Bing Maps (2008)

0 3750 7500 FEET

Groundwater Management Zones

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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Groundwater basins were redesignated as Groundwater Management Zones by the Santa Ana RWQCB in its February 2008 update of the Basin Plan.

Water in the San Jacinto River Basin is confined in the eastern part of the basin between the Claremont and Casa Loma faults. The basin consists of alluvium-filled valleys and underlying canyons bordered by steep bedrock hills and mountains. The thickness of the deposits ranges from approximately 200 to 1,000 feet (ft), with a maximum depth of the deposits at approximately 900 ft in the west and north and greater than 5,000 ft in the east. Natural groundwater recharge is mainly from percolation of the San Jacinto River and its tributaries. In dry years, artificial discharge from infiltration ponds in the upper watershed and from percolation in Lake Perris can exceed natural discharge. Historically, groundwater flowed toward the course of the San Jacinto River and westward out of the basin. However, groundwater extraction has resulted in localized reversed flow patterns and groundwater depressions.

There are active groundwater wells throughout the MCP study area. In the project area, depth to groundwater is variable and ranges from approximately 20 ft to 350 ft below the surface. During borings conducted as part of the geotechnical studies for the MCP project, groundwater was encountered at depths ranging from 21 to 48 ft below ground surface. Groundwater was encountered at depths ranging from 35 to 48 ft in portions of Perris Valley adjacent to the Perris Drain, and at a depth of 21 ft at the eastern end of the project along SR-79. At all other boring locations, groundwater was not encountered.

Groundwater Beneficial Uses

The beneficial uses for the Perris-North, Lakeview/Hemet-North, and San Jacinto-Upper Pressure Groundwater Management Zones as designated by the Basin Plan are:

- Municipal and Domestic Supply (MUN)
- Agricultural Supply (AGR)
- Industrial Service Supply (IND)
- Industrial Process Supply (PROC)

Groundwater Quality Objectives

The groundwater quality objectives for all groundwater as designated in the Basin Plan are provided in Table 3.10.D.

Table 3.10.D Groundwater Quality Objectives

Constituent	Concentration	Area
Arsenic	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Boron	Shall not exceed 0.75 mg/L as a result of controllable water quality factors.	Santa Ana Region
Chloride	Shall not exceed 500 mg/L as a result of controllable factors.	MUN beneficial use designation
Coliform (total)	Shall not exceed 2.2 organisms/100 mL median over any 7-day period as a result of controllable water quality factors.	MUN beneficial use designation
Color	Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses.	Santa Ana Region
Cyanide	Shall not exceed 0.2 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Fluoride	Shall not exceed 1.0 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Hardness	Shall not be increased as a result of waste discharges to levels that adversely affect beneficial uses.	MUN beneficial use designation
Oil and grease	Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that cause a nuisance or adversely affect beneficial uses.	Santa Ana Region
Barium	Shall not exceed 1.0 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Cadmium	Shall not exceed 0.01 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Chromium	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Cobalt	Shall not exceed 0.2 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Copper	Shall not exceed 1.0 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Iron	Shall not exceed 0.3 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Lead	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Manganese	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Mercury	Shall not exceed 0.002 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Selenium	Shall not exceed 0.01 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Silver	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Methylene blue-activated substances	Shall not exceed 0.05 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
pH	The pH of groundwater shall not be raised above 9 or depressed below 6 as a result of controllable water quality factors.	Santa Ana Region
Radioactivity	Shall not exceed the California Code of Regulations, Title 22, standards of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha, 20,000 pCi/L for tritium, 8 pCi/L for strontium-90, 50 pCi/L for gross beta, and 20 pCi/L for uranium.	MUN beneficial use designation
Sodium	Shall not exceed a sodium absorption rate of 9.	AGR beneficial use designation
Sulfate	Shall not exceed 500 mg/L as a result of controllable water quality factors.	MUN beneficial use designation
Taste and odor	Groundwater shall not contain taste- or odor-producing substances in concentrations that adversely affect beneficial uses.	Santa Ana Region
Toxic substances	All waters shall be maintained free of substances in concentrations that are toxic or that produce detrimental physiological responses in human, plant, animal, or aquatic life.	Santa Ana Region

Source: *Water Quality Assessment Report* (August 2011).
AGR = Agricultural Water Supply
MUN = Municipal Water Supply
mg/L = milligrams per liter
pCi/L = picocuries per liter
mL = milliliters
pH = percentage of hydrogen

3.10.3 Environmental Consequences

3.10.3.1 Permanent Impacts

Build Alternatives

Pollutants of concern during operation of a transportation facility include sediment, trash, petroleum products, metals, and chemicals. An increase in impervious area would increase the volume of runoff during a storm, which would more effectively transport pollutants to receiving waters and may lead to downstream erosion. There would be an increase in impervious area with implementation of the project; therefore, there would be an increase in the volume of runoff during a storm or a subsequent increase of pollutant loading of receiving waters. Alternatives 4 Modified, 5 Modified, and 9 Modified would add 525.0, 516.9, and 479.5 ac, respectively, of new pavement. San Jacinto North Design Variation (SJN DV) would decrease the amount of impervious surface by 19.2 ac for all the modified Build Alternatives. San Jacinto River Bridge Design Variation (SJRB DV) would result in the same amount of impervious surface as the modified Build Alternatives.

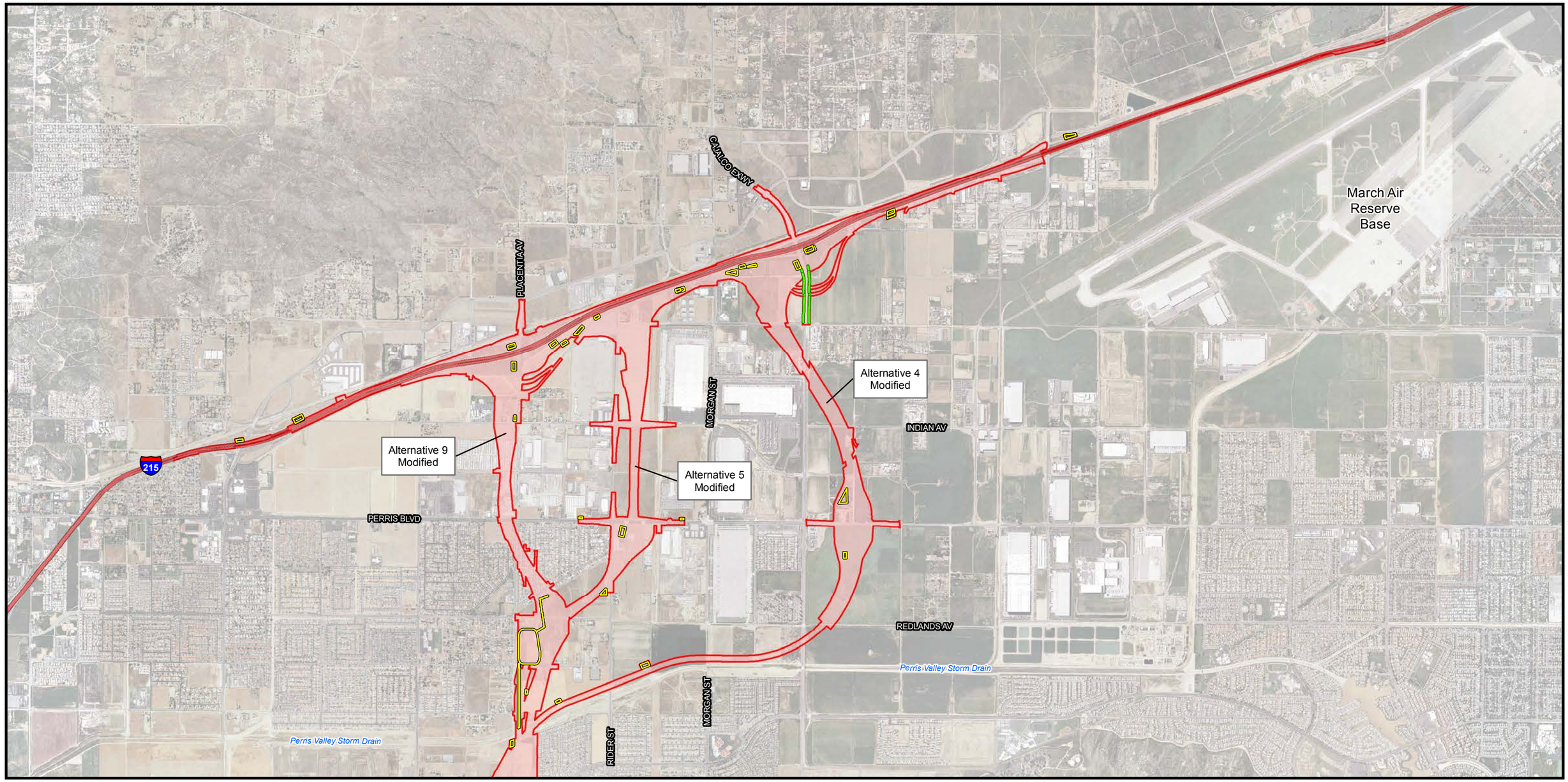
Design Pollution Prevention and Treatment BMPs would be incorporated into the MCP project to minimize impacts to water quality during operation of the MCP project. The following Design Pollution Prevention BMPs would be implemented as part of the MCP project:

- **Downstream Effects.** As noted above, the MCP project would increase the total impervious surface area in the study area, which would increase runoff volume and flow velocity. Potential increased erosion from increased runoff flows would be minimized using erosion control measures such as rock slope protection.
- **Slope Surface Protection.** The creation of new cut-and-fill slopes would potentially increase erosion. Retaining walls would be incorporated to reduce steepness of slopes or to shorten slopes. Slopes would be rounded and shaped to reduce concentrated flow. During final design, slowing velocities via landform grading will be evaluated and applied in accordance with Caltrans' design standards.
- **Concentration Flow Conveyance Systems.** Existing crossing-culverts to be retained would be extended to the new-cut fill line. Where cross-culverts convey on-site and off-site runoff under the MCP alignment, the inlet/outlet would have flared end sections. Rock slope protection would be provided at the culvert outlets to minimize scour and erosion at the cross-culvert transitions. During final design, infiltration of highway runoff into roadside areas via sheet flow will be evaluated and applied in accordance with Caltrans' design standards.

- **Preservation of Existing Vegetation.** The project would require removal of existing vegetation; however, the existing vegetation and landscaping on existing slopes would be preserved to the greatest extent possible.

Permanent Treatment BMPs would also be incorporated into the MCP project. Treatment BMPs are measures designed to remove pollutants from storm water runoff prior to discharge to receiving waters. Biofiltration swales and infiltration basins are proposed as part of the project. Locations of proposed Treatment BMPs are depicted in Figure 3.10.3. During final design, if it is determined that soil conditions at the location of the proposed BMP are not appropriate for infiltration, the proposed infiltration basin at that location would be substituted with a detention basin. The proposed BMPs would treat 105.3, 107.5, and 114.8 percent of the net new impervious surface area for Alternatives 4 Modified, 5 Modified, and 9 Modified, respectively. With SJN DV, Alternative 4 Modified, 5 Modified, and 9 Modified BMPs would treat 100.5, 101.6, and 110.5 percent of the net new impervious surface area, respectively. SJRB DV would treat the same percentage as the modified Build Alternatives. The proposed treatment BMPs are discussed in detail below.

- **Biofiltration Swales.** Biofiltration swales (bioswales) are vegetated channels that convey storm water and remove pollutants by filtration through the grass, sedimentation, adsorption to soil particles, and infiltration through the soil. Bioswales are effective at removing debris and solid particles, although some removal of dissolved constituents is also achieved. Two biofiltration swales are proposed as part of the project. For Alternatives 4 Modified, 5 Modified, and 9 Modified (with or without the Design Variations), the biofiltration swales would treat runoff from 5.6 ac, 5.6 ac, and 5.4 ac of paved areas, respectively. Native plant species will be considered for vegetation of the biofiltration swales.
- **Infiltration Devices.** Infiltration basins are designed to remove pollutants by capturing storm water runoff and infiltrating it directly to the soil, instead of it being discharged into receiving waters. Infiltration basins remove a wider range of pollutants than detention basins. Pollutants removed by infiltration basins include total suspended solids, nutrients, pesticides, particulate metals, dissolved metals, pathogens, litter, biochemical oxygen demand, and total dissolved solids. Infiltration basins would be implemented wherever soil is appropriate (infiltration greater than 20 percent). A total of 37, 41, and 36 infiltration basins are proposed for Alternatives 4 Modified, 5 Modified, and 9 Modified (with or without Design Variations), respectively. For Alternatives 4 Modified, 5 Modified, and 9 Modified, these basins would treat runoff from 507.3, 505.0, and 508.2 ac of



LEGEND

- Limits of Proposed Improvements (All Alternatives and Design Variations)
- Infiltration/Detention Basin
- Bioswale Locations

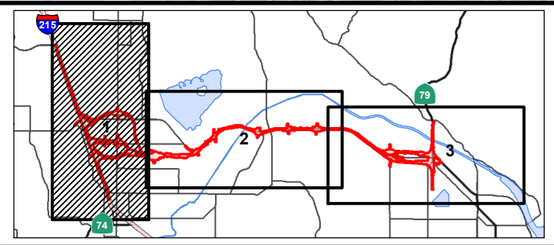


FIGURE 3.10.3
Page 1 of 3

SOURCE: Bing (2010); TBM (2010); USGS NHD (2010); Jacobs Engineering (3/2011)

0 0.25 0.5 MILES

Proposed Treatment BMP Locations

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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Lake Perris
San Jacinto River
BRIDGE ST
RAMONA EXWY
RIDER ST
LAKEVIEW AV
HANSEN AV
EVANS RD

LEGEND

- Limits of Proposed Improvements (All Alternatives and Design Variations)
- Infiltration/Detention Basin
- Bioswale Locations

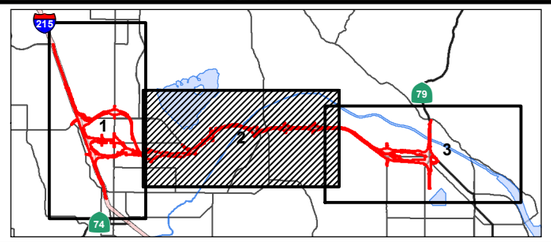

FIGURE 3.10.3

SOURCE: Bing (2010); TBM (2010); USGS NHD (2010); Jacobs Engineering (3/2011)

0 0.25 0.5 MILES

Proposed Treatment BMP Locations

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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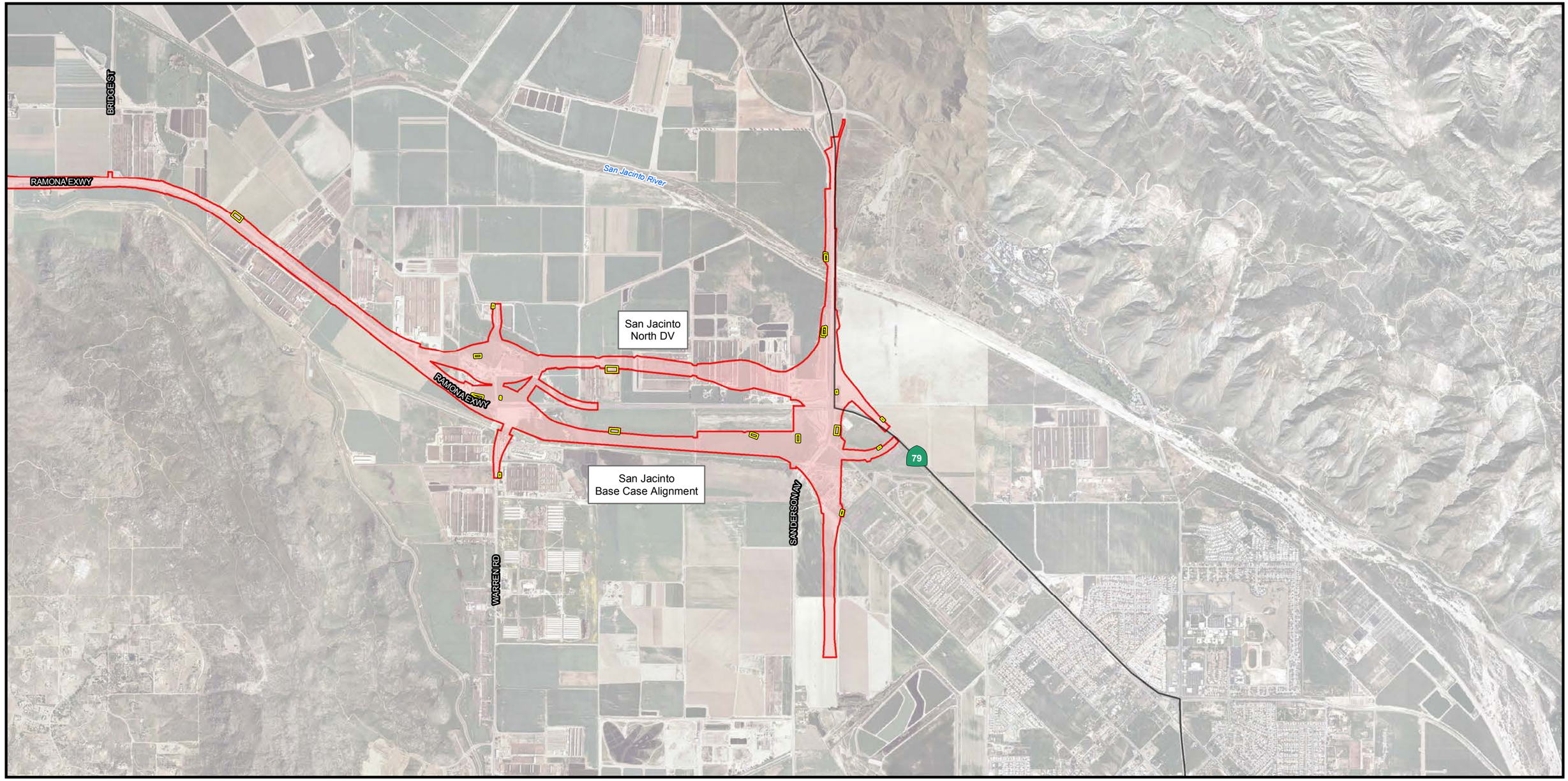

LEGEND

- Limits of Proposed Improvements (All Alternatives and Design Variations)
- Infiltration/Detention Basin
- Bioswale Locations

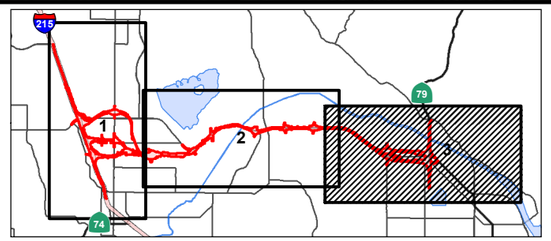

FIGURE 3.10.3
Page 3 of 3

SOURCE: Bing (2010); TBM (2010); USGS NHD (2010); Jacobs Engineering (3/2011)

0 0.25 0.5 MILES

Proposed Treatment BMP Locations

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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paved area, respectively. There would be 4.8 fewer ac of paved area treated under SJN DV for all the modified Build Alternatives. SJRB DV would treat the same acreage as the modified Build Alternatives.

- **Detention Devices.** Detention basins are designed to reduce sediment and particulate loading in storm water runoff. Water is temporarily detained in the basin to allow sediment and particulates to settle out before the runoff is discharged to receiving waters. Detention devices usually retain water for 24 to 72 hours. During final design, if the infiltration testing results indicate that the infiltration rate at a location proposed for an infiltration basin is less than 0.5 inch per hour, thereby indicating that infiltration basins are not appropriate, the infiltration basin would be substituted with a detention basin.

The proposed infiltration basins and bioswales would target constituents of concern from transportation facilities. Because runoff in the project area is currently untreated and implementation of the proposed BMPs would treat the net new impervious surface area, no adverse impacts to water quality are anticipated to result from implementation of the proposed project. A quantitative assessment of pre- and post-storm water quality is presented below.

A volume-based pollutant loading model was used to assess storm water quality impacts associated with the proposed project. The empirical modeling approach was adapted from the Simple Method. Additional details of the modeling approach can be found in the *Water Quality Assessment Report* (August 2011). Modeling was performed on total suspended solids, total phosphorus, nitrate, total copper, total lead, and total zinc. These constituents were selected based on the availability of storm water runoff concentrations for the various constituents and land uses, as well as on treatment efficiencies of the proposed BMPs. Because pathogens are difficult to model unless a strong understanding of the source is known, pathogens were not modeled. In addition, oil and grease, hydrocarbons, and trash and debris were excluded from modeling because they are heterogeneous in nature and do not exhibit traditional behavior associated with buildup and runoff from impervious surfaces.

Table 3.10.E shows the modeling results for total suspended solids. As shown in this table, the annual load and concentration of total suspended solids from the proposed project with treatment BMPs implemented are expected to be less than existing conditions.

Table 3.10.E Anticipated Total Suspended Solids Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	137,616	191,321	63,750	-53.7
Alternative 4 Modified SJN DV	130,930	188,802	61,231	-53.2
Alternative 5 Modified	141,279	190,345	62,773	-55.6
Alternative 5 Modified SJN DV	134,594	187,825	60,254	-55.2
Alternative 9 Modified	129,711	186,646	59,075	-54.5
Alternative 9 Modified SJN DV	123,026	184,127	56,556	-54.0
Concentration (mg/L)				
Alternative 4 Modified	114.6	112.7	111.7	-2.5
Alternative 4 Modified SJN DV	113.5	112.7	111.7	-1.6
Alternative 5 Modified	116	113	112	-3.3
Alternative 5 Modified SJN DV	114.5	112.7	111.7	-2.5
Alternative 9 Modified	112.8	112.7	111.6	-1.0
Alternative 9 Modified SJN DV	111.6	112.7	111.6	-0.03

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP project constructed without BMPs.
[3] With MCP project and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

Table 3.10.F shows the modeling results for total phosphate. As shown in this table, the annual load and concentration of total phosphate from the proposed project with treatment BMPs implemented are expected to be less than existing conditions. As discussed previously, the receiving waters for the project area are impaired for nutrients and/or organic enrichment/low dissolved oxygen. Because the project is anticipated to reduce the concentration and annual load of total phosphate, the project would not contribute to the existing impairment.

Table 3.10.G shows the modeling results for nitrate. As shown in this table, the annual load of nitrate is predicted to be lower postproject compared to existing conditions. The anticipated postproject concentrations of nitrate are predicted to be slightly higher than existing conditions. Because the project includes infiltration basins, runoff would infiltrate and not be conveyed into surface waters.

Therefore, although the nitrate concentration in runoff would be slightly higher with the MCP project than without the project, there would be a smaller volume of runoff and, therefore, a lower annual load of nitrate. As discussed previously, the receiving postproject total copper, total lead, and total zinc concentrations are anticipated to be higher than existing conditions. Because the project includes infiltration basins, waters for the project area are impaired for nutrients and/or organic enrichment/low

Table 3.10.F Anticipated Total Phosphorus Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	574	492	165	-71.2
Alternative 4 Modified SJN DV	561	486	159	-71.7
Alternative 5 Modified	575	490	163	-71.7
Alternative 5 Modified SJN DV	562	483	156	-72.1
Alternative 9 Modified	539	480	153	-71.5
Alternative 9 Modified SJN DV	525	474	147	-72.0
Concentration (mg/L)				
Alternative 4 Modified	0.48	0.29	0.29	-39.4
Alternative 4 Modified SJN DV	0.49	0.29	0.29	-40.4
Alternative 5 Modified	0.47	0.29	0.29	-38.3
Alternative 5 Modified SJN DV	0.48	0.29	0.29	-39.3
Alternative 9 Modified	0.47	0.29	0.29	-38.1
Alternative 9 Modified SJN DV	0.48	0.29	0.29	-39.1

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP constructed without BMPs.
[3] With MCP and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

Table 3.10.G Anticipated Nitrate Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	1,224	1,816	609	-50.3
Alternative 4 Modified SJN DV	1,173	1,793	585	-50.2
Alternative 5 Modified	1,242	1,807	599	-51.8
Alternative 5 Modified SJN DV	1,192	1,783	575	-51.7
Alternative 9 Modified	1,184	1,772	564	-52.3
Alternative 9 Modified SJN DV	1,133	1,748	540	-52.3
Concentration (mg/L)				
Alternative 4 Modified	1.02	1.07	1.07	4.7
Alternative 4 Modified SJN DV	1.02	1.07	1.07	4.9
Alternative 5 Modified	1.02	1.07	1.07	5.0
Alternative 5 Modified SJN DV	1.01	1.07	1.07	5.2
Alternative 9 Modified	1.03	1.07	1.07	3.6
Alternative 9 Modified SJN DV	1.03	1.07	1.07	3.7

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP constructed without BMPs.
[3] With MCP and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

dissolved oxygen. The only water quality objective for nitrate (10 milligrams per liter as nitrogen) is applicable solely to waters used for municipal supply. Although waters in the project area are not used for municipal supply, the storm water runoff from the project site is anticipated to be substantially lower than the numeric water quality objective and is not expected to promote aquatic growth. In addition, drought-resistant plants would be planted along the MCP facility, which would promote the use of xeric (adapted to arid conditions) landscaping techniques and reduce the need for fertilizer application. Therefore, the nitrate concentration from the project site is anticipated to be lower than the 1.07 milligrams per liter measured at typical Caltrans facilities. Because the annual nitrate load would decrease and the concentration is anticipated to increase only slightly and still be below water quality objectives of the Basin Plan, no adverse impacts would occur from any increase in nitrate concentration. In addition, the project would not contribute to the existing nutrient impairment of downstream receiving waters.

Tables 3.10.H through 3.10.J show the modeling results for total copper, total lead, and total zinc. As shown in these tables, the postproject loading for all of these constituents is predicted to be lower than existing conditions. However, the runoff to these basins would infiltrate and not run off into surface waters. Therefore, although the metals concentration in runoff would be slightly higher with implementation of the MCP project, there would be a smaller volume of runoff and, therefore, a lower annual load of metals.

The water quality criteria set by the California Toxics Rule are based on dissolved metal concentrations. Dissolved metals were not modeled because the concentrations were not available for all land uses. However, dissolved metal concentrations were available for transportation facilities. The anticipated ranges of dissolved metal concentrations from the MCP project are shown in Table 3.10.K and are compared with the California Toxics Rule acute water quality criteria. Acute criteria represent the concentration of a pollutant that an organism can be exposed to for a short period of time without deleterious effects. Chronic criteria represent the concentration of a pollutant that an organism can be exposed to for an extended period of time (4 days).

Due to the intermittent nature of storm water runoff in southern California, the acute criteria are more applicable than chronic criteria. Therefore, acute criteria are used for analysis purposes. As shown in Table 3.10.K, the dissolved metals concentrations measured at transportation facilities are lower than the California Toxics Rule criteria.

Table 3.10.H Anticipated Total Copper Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	40.1	81.5	19.3	-51.9
Alternative 4 Modified SJN DV	38.5	80.4	18.5	-51.9
Alternative 5 Modified	41.1	81.1	19.0	-53.7
Alternative 5 Modified SJN DV	39.5	80.0	18.2	-53.8
Alternative 9 Modified	38.0	79.5	17.9	-53.0
Alternative 9 Modified SJN DV	36.4	78.4	17.1	-53.0
Concentration (mg/L)				
Alternative 4 Modified	0.033	0.034	0.034	1.2
Alternative 4 Modified SJN DV	0.033	0.034	0.034	1.2
Alternative 5 Modified	0.034	0.034	0.034	0.7
Alternative 5 Modified SJN DV	0.034	0.034	0.034	0.6
Alternative 9 Modified	0.033	0.034	0.034	2.2
Alternative 9 Modified SJN DV	0.033	0.034	0.034	2.2

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP constructed without BMPs.
[3] With MCP and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

Table 3.10.I Anticipated Total Lead Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	47.2	81.5	27.3	-42.3
Alternative 4 Modified SJN DV	45.2	80.4	26.2	-42.0
Alternative 5 Modified	48.5	81.1	26.8	-44.7
Alternative 5 Modified SJN DV	46.4	80.0	25.8	-44.5
Alternative 9 Modified	45.6	79.5	25.3	-44.6
Alternative 9 Modified SJN DV	43.5	78.4	24.2	-44.4
Concentration (mg/L)				
Alternative 4 Modified	0.039	0.048	0.048	21.4
Alternative 4 Modified SJN DV	0.039	0.048	0.048	21.9
Alternative 5 Modified	0.040	0.048	0.048	20.4
Alternative 5 Modified SJN DV	0.040	0.048	0.048	20.9
Alternative 9 Modified	0.040	0.048	0.048	20.4
Alternative 9 Modified SJN DV	0.039	0.048	0.048	20.9

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP constructed without BMPs.
[3] With MCP and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

Table 3.10.J Anticipated Total Zinc Loading and Concentration

Section or Alternative	Existing Condition[1]	Developed Conditions without BMPs[2]	Developed Conditions with BMPs[3]	% Change[4]
Loading (lbs/yr)				
Alternative 4 Modified	216	317	106	-51.1
Alternative 4 Modified SJN DV	206	313	102	-50.6
Alternative 5 Modified	219	316	104	-52.4
Alternative 5 Modified SJN DV	208	312	100	-52.0
Alternative 9 Modified	203	310	98	-51.7
Alternative 9 Modified SJN DV	192	306	94	-51.2
Concentration (mg/L)				
Alternative 4 Modified	0.18	0.19	0.19	3.0
Alternative 4 Modified SJN DV	0.18	0.19	0.19	4.0
Alternative 5 Modified	0.18	0.19	0.19	3.6
Alternative 5 Modified SJN DV	0.18	0.19	0.19	4.6
Alternative 9 Modified	0.18	0.19	0.19	5.0
Alternative 9 Modified SJN DV	0.17	0.19	0.19	6.2

Source: *Water Quality Assessment Report (*August 2011).
Note: Because the new impervious surface area would be the same, anticipated loading and concentration for SJRB DV is the same as for the modified Build Alternatives.
[1] Existing land use.
[2] With MCP constructed without BMPs.
[3] With MCP and BMPs constructed.
[4] Change between existing and developed conditions with BMPs.
BMPs = Best Management Practices
lbs/yr = pounds per year
MCP = Mid County Parkway
mg/L = milligrams per liter
SJN DV = San Jacinto North Design Variation
SJRB DV = San Jacinto River Bridge Design Variation

Table 3.10.K Anticipated Dissolved Metals Concentrations Compared with Water Quality Criteria

	Concentration from the Proposed Project with BMPs (mg/L)	California Toxics Rule Acute Criteria (mg/L)[1,2]
Dissolved Copper	0.015	0.016-0.023
Dissolved Lead	0.008	0.079-0.12
Dissolved Zinc	0.069	0.14-0.19

Source: *Water Quality Assessment Report (*August 2011).
[1] Acute concentration equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time without deleterious effects. In deriving the acute criteria, organisms were exposed to pollutant concentrations for 24 to 48 hours.
[2] California Toxics Rule criteria were calculated using a hardness of 120 to 275 mg/L, based on the average hardness of the San Jacinto River and Canyon Lake presented in Table 2A.
BMPs = Best Management Practices
mg/L = milligrams per liter

Therefore, no adverse impacts related to total metals in storm water runoff are anticipated with implementation of the MCP project. As discussed previously, Lake Elsinore is impaired for toxicity. Because total metal loading would decrease with implementation of the MCP project and metals concentrations would be below California Toxic Rule criteria, the project would not contribute to the existing toxicity impairment.

Canyon Lake is also impaired for pathogens, and Lake Elsinore is impaired for polychlorinated biphenyls (PCBs). Pathogens and polychlorinated biphenyls are not constituents of concern from roadway facilities. Existing pole- and pad-mounted electrical transformers may contain PCBs. In addition, structures constructed prior to 1976 are presumed to have PCBs in light ballasts and electrical equipment. However, any transformers or structures that would be removed or demolished during construction would be inspected for PCBs. Building materials that exceed California Health and Safety Code criteria for hazardous waste will be disposed of at the appropriate Class I or II facility. For these reasons, the MCP project would not contribute to the existing pathogens and polychlorinated biphenyls impairments.

Because the project includes infiltration basins, runoff from the new impervious surface areas would infiltrate to the groundwater. Therefore, the increase in impervious surface areas would not have a substantial impact on groundwater levels.

Construction of the MCP project would require new drainage facilities, as discussed in detail in Section 2.3.2.17. The drainage facilities would be sized no less than the sizes in the Master Plan for the San Jacinto River Basin. In addition, the infiltration basins and bioswales would ensure that stormwater runoff does not result in scouring and increased sediment content.

As stated above, the treatment BMPs would target constituents of concern from the MCP facilities. Therefore, when treatment BMPs are implemented as stipulated in Mitigation Measure WQ-3, the MCP project would not result in adverse impacts to water quality.

No Build Alternatives

Under Alternative 1A, the planned street network would be constructed, except for improvements to the Ramona Expressway. Treatment and Design Pollution Prevention BMPs would be constructed for roadway improvement projects consistent with Caltrans and SWRCB policies and guidelines. However, because Ramona Expressway would remain as it is today, runoff from this roadway would remain untreated.

Under Alternative 1B, the planned street network would be developed according to the Circulation Element of the Riverside County General Plan. Under Alternative 1B, Treatment and Design Pollution Prevention BMPs would be constructed for roadway improvement projects consistent with Caltrans and SWRCB policies and guidelines. Water quality impacts would be expected to be similar for the MCP Build

Alternatives because Treatment and Design Pollution Prevention BMPs would be implemented under both scenarios.

3.10.3.2 Temporary Impacts

Build Alternatives

Pollutants of concern during construction include sediment, trash, petroleum products, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality and aquatic habitats.

Construction of the project would require the disturbance of existing soils resulting from construction staging, grading of the new roadway and interchanges, and grading of the resulting cut/fill slopes. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation due to rainfall/runoff and wind compared to existing conditions.

In addition, chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked during construction of the MCP project with the potential to be transported via storm runoff into receiving waters.

The total disturbed area for Alternatives 4 Modified, 5 Modified, and 9 Modified would be approximately 1,153, 1,145, and 1,091 ac, respectively. With SJN DV, each Build Alternative would disturb 13 ac less. SJRB DV would disturb 3.5 ac more than the modified Build Alternatives.

Construction in the vicinity of surface waters, including construction and widening of bridges, requires special consideration to prevent adverse direct impacts to surface waters. That is, because the bridges would be constructed within and above surface water, there is a greater potential for pollutants to enter the waters from bridge construction than from road construction, which is separated from surface water by land. Alternatives 4 Modified, 5 Modified, and 9 Modified would cross 13, 11, and 11 streams, respectively. With SJN DV, each Build Alternative would cross one less stream. SJRB DV would not change the number of stream crossings compared to the modified Build Alternatives.

Alternative 4 Modified and the SJN DV would be constructed over the greatest number of streams, and would, therefore, have the greatest potential for pollutants to enter surface waters during bridge construction. Alternatives 5 Modified, 9 Modified,

and the SJN DV would cross the least number of streams and would, therefore, have the least potential for pollutants to enter the waters during bridge construction.

Bridge construction may necessitate more frequent inspections and more deliberate work processes, etc., with respect to water quality protection. BMPs applicable to bridge projects include the temporary diversion of water courses around the work area, implementation of debris-catching devices on construction equipment, and embankment protection/stabilization. The BMPs would address both runoff from the bridge and construction of the MCP project.

Under the Construction General Permit, RCTC would be required to prepare a SWPPP and implement construction BMPs detailed in the SWPPP and illustrated on the construction plans. Construction BMPs would include, but not be limited to, Erosion and Sediment Control BMPs designed to minimize erosion and retain sediment on site, and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. In addition, as noted in the *Water Quality Assessment Report*, in areas within State right of way with slopes steeper than 4:1, an erosion control plan approved by the Caltrans District 8 Landscape Architect will be required.

The requirements of the Construction General Permit are based on the risk level of the project. The overall risk level is based on two factors: receiving water risk and sediment risk. A preliminary risk determination was performed for the MCP project. The risk determination would be recalculated during final design during preparation of the SWPPP. Runoff from the project site would not discharge to a 303(d)-listed water body impaired for sediment or discharge to a water body with designated beneficial uses of Spawning, Reproduction, and Development (SPAWN), Cold Freshwater Habitat (COLD), and Migration of Aquatic Organisms (MIGRATORY); therefore, the receiving water risk is low. Based on the anticipated construction schedule (January 2016 through December 2019), the project sediment risk would be medium (soil loss = 45.1 tons per acre). Therefore, the project is anticipated to be Risk Level 2. Risk Level 2 projects are required to implement Good Housekeeping, Erosion Control, and Sediment Control BMPs; perform quarterly non-storm water discharge observations; weekly, pre-storm, interim storm, and post-storm inspections; prepare and implement a Rain Event Action Plan; prepare and submit an Annual Report via the Storm Water Multi-Application and Report Tracking System; collect storm water samples; and comply with the pH and turbidity Numeric Action Levels specified in the Construction General Permit.

As stated above, construction site BMPs would be implemented to minimize water quality impacts during construction and could include, but would not be limited to, the construction site BMPs listed in Table 3.10.L. When construction BMPs are properly designed, implemented, and maintained as required in Mitigation Measure WQ-1, then no adverse water quality impacts would occur.

Table 3.10.L Proposed Construction Site BMPs

Category	BMP No.	BMP Name
Temporary Soil Stabilization BMPs	SS-1	Scheduling
	SS-2	Preservation of Existing Vegetation
	SS-3	Hydraulic Mulch
Temporary Sediment Control BMPs	SC-1	Silt Fence
	SC-3	Sediment Trap
	SC-4	Check Dam
	SC-5	Fiber Rolls
	SC-6	Gravel Bag Berm
	SC-7	Street Sweeping and Vacuuming
	SC-10	Storm Drain Inlet Protection
Wind Erosion Control BMPs	WE-1	Wind Erosion Control
Tracking Control BMPs	TC-1	Stabilized Construction Entrance/Exit
	TC-2	Stabilized Construction Roadway
Non-Storm Water Control BMPs	NS-1	Water Conservation Practices
	NS-2	Dewatering Operations
	NS-3	Paving and Grinding Operations
	NS-4	Temporary Stream Crossing
	NS-5	Clear Water Diversion
	NS-6	Illicit Connection/Illegal Discharge Detection and Reporting
	NS-7	Potable Water/Irrigation
	NS-8	Vehicle and Equipment Cleaning
	NS-9	Vehicle and Equipment Fueling
	NS-10	Vehicle and Equipment Maintenance
	NS-11	Pile Driving Operations
	NS-12	Concrete Curing
	NS-13	Material and Equipment Use Over Water
	NS-14	Concrete Finishing
	NS-15	Structure Demolition/Removal Over or Adjacent to Water
Waste Management and Material Pollution Control BMPs	WM-1	Material Delivery and Storage
	WM-2	Material Use
	WM-3	Stockpile Management
	WM-4	Spill Prevention and Control
	WM-5	Solid Waste Management
	WM-6	Hazardous Waste Management
	WM-8	Concrete Waste Management
	WM-9	Sanitary/Septic Waste Management
	WM-10	Liquid Waste Management

Source: *Water Quality Assessment Report (*August 2011).
BMPs = Best Management Practices

As discussed previously, there are active groundwater wells throughout the MCP study area. The exact location of the active wells would be determined during final design as this level of detail is not addressed in the current design level at 35 percent completion. As stated in Mitigation Measure WQ-4, active wells would be relocated or abandoned during construction of the MCP project.

Groundwater dewatering may be necessary during construction. Dewatered groundwater may contain high levels of total dissolved solids, salinity, high nitrates, or other contaminants that could be introduced to surface waters during construction. The specific locations of groundwater dewatering activities have not yet been identified but are expected in areas of deep excavation and/or shallow groundwater. Groundwater dewatering activities will be subject to the requirements of the De Minimus Permit (Order No. R8-2009-0003). The De Minimus Permit requires permittees to conduct monitoring of dewatering discharges and adhere to effluent and receiving water limitations contained within the permit so that water quality of surface waters is ensured protection. Compliance with this permit, as stipulated in Mitigation Measure WQ-2, would minimize impacts to water quality during dewatering. However, dewatering activities would be temporary, and the volume of groundwater removed would not be substantial. Therefore, impacts to groundwater levels from groundwater dewatering would be minimal.

A Section 401 and a Section 404 permit will be required from the RWQCB and USACE, respectively. These permits are discussed in Section 3.18, Wetlands and Other Waters.

No Build Alternatives

Under the No Build Alternatives, projects with construction activities exceeding 1.0 ac would be subject to the requirements of the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002) and the Riverside County MS4 Permit. These projects would be required to prepare a SWPPP and to implement Construction Site BMPs to minimize water quality impacts during construction. The agencies responsible for the No Build improvements would be required to ensure that Construction Site BMPs are properly designed, implemented, and maintained for each individual project, as required under the General Permit; therefore, no adverse water quality impacts would occur under the No Build Alternatives.

3.10.4 Avoidance, Minimization, and/or Mitigation Measures

As part of the Caltrans Project Delivery Storm Water Management Program described in the SWMP, selected Construction Site, Design Pollution Prevention, and Treatment BMPs will be incorporated into the final design of the MCP project. Infiltration basins and bioswales are proposed as part of the project. The Caltrans SWMP will be implemented in accordance with the Caltrans NPDES permit. It is not known at this time whether the MCP facility will be adopted by Caltrans as a state highway or if it would be a local highway under the jurisdiction of Riverside County. As a result, it is not known at this time whether the project construction would need to comply with the conditions in the Caltrans or Riverside County NPDES permits. Nonetheless, compliance with the applicable Caltrans or County standard requirements of the SWMP and NPDES permits (as detailed in Mitigation Measures WQ-1, WQ-2, and WQ-3) for potential short-term and long-term impacts will result in no adverse impacts to water quality with implementation of the project.

The following mitigation measures would apply to all MCP Build Alternatives and Design Variations.

WQ-1 **National Pollutant Discharge Elimination System Permits.** During construction, the Riverside County Transportation Commission (RCTC) Project Engineer will require the Construction Contractor to comply with the provisions of the following NPDES Permits:

- *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002) (the project construction would be required to comply with the conditions of this NPDES permit or any subsequent permit as it relates to construction of the MCP project, regardless of whether the MCP facility is a state or local highway)
- *National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities, and Activities* (Order No. 2012-0011-DWQ) (the project construction would be required to comply with the conditions of the Caltrans MS4 NPDES permit or any subsequent permit as it

relates to construction of the MCP project, if the MCP facility is adopted as a state highway)

- *National Pollutant Discharge Elimination System (NPDES) Permit for Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County within the Santa Ana Region* (Order No. R8-2010-003, NPDES No. CAS618033) (the project construction would be required to comply with the conditions of this NPDES permit [the Riverside County MS4 permit] or any subsequent permit as it relates to construction of the MCP project, if the MCP facility is a local highway not adopted as a state highway)

This will include submission of the Permit Registration Documents, including a Notice of Intent, risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement to the State Water Resources Control Board via the Storm Water Multi-Application and Report Tracking System at least 7 days prior to the start of construction.

The RCTC Resident Engineer will not authorize the Construction Contractor to begin construction activities until a Waste Discharger Identification number is received from the Storm Water Multi-Application and Report Tracking System.

The RCTC Resident Engineer will require the Construction Contractor to prepare the SWPPP and will require the SWPPP to be prepared by a Qualified SWPPP Developer. The RCTC Resident Engineer will require the SWPPP to meet the requirements of the Construction General Permit; to identify potential pollutant sources associated with construction activities; identify non-storm water discharges; develop a water quality monitoring and sampling plan; and identify, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants associated with the construction site. Those BMPs will include, but not be limited to, Good Housekeeping, Erosion Control, and Sediment Control BMPs.

The RCTC Resident Engineer will require the Construction Contractor to implement the BMPs identified in the SWPPP during site preparation, grading excavation, construction, and site restoration activities, consistent with how, when, and where the SWPPP indicates those BMPs should be implemented.

The RCTC Resident Engineer will require the Construction Contractor to comply with the sampling and reporting requirements of the Construction General Permit.

The RCTC Resident Engineer will require the Construction Contractor to have a Rain Event Action Plan prepared by a Qualified SWPPP Developer prior to the initiation of site preparation, grading, excavation, or construction activities.

The RCTC Resident Engineer will require the Construction Contractor to have the Rain Event Action Plan implemented by a Qualified SWPPP Developer within 48 hours prior to a rain event of 50 percent or greater probability of precipitation according to the National Oceanic and Atmospheric Administration.

The RCTC Resident Engineer will require the Construction Contractor to prepare and submit an Annual Report to the State Water Resources Control Board (SWRCB) no later than September 1 of each year using the Storm Water Multi-Application and Report Tracking System.

The RCTC Resident Engineer will submit a Notice of Termination to the SWRCB within 90 days of completion of construction and stabilization of the site.

WQ-2 **National Pollutant Discharge Elimination System CAG998001.** The RCTC Resident Engineer will require the Construction Contractor to comply with the provisions of the *General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality*, Order No. R8-2009-0003 National Pollutant Discharge Elimination System (NPDES) No. CAG998001 (the project construction would be required to comply with the conditions of this NPDES permit or any subsequent permit as it relates to construction of the MCP project, regardless of

whether the MCP facility is a state or local highway), as they relate to discharge of non-storm water dewatering wastes for the project.

The RCTC Resident Engineer will require the Construction Contractor to submit to the Santa Ana Regional Water Quality Control Board (RWQCB) a Notice of Intent at least 60 days prior to the start of construction.

The RCTC Resident Engineer will require the Construction Contractor to submit to the Santa Ana RWQCB notification of discharge at least 5 days prior to any planned discharges.

The RCTC Resident Engineer will require the Construction Contractor to submit to the Santa Ana RWQCB monitoring reports by the 30th day of each month following the monitoring period.

WQ-3 **Design Pollution Prevention and Treatment Best Management Practices.** Riverside County Transportation Commission (RCTC) will comply with the *Storm Water Management Plan* (SWMP) and follow the procedures outlined in the *Storm Water Quality Handbooks, Project Planning and Design Guide* for implementing Design Pollution Prevention and Treatment BMPs for the project that address pollutants of concern. This will include coordination with the Santa Ana RWQCB with respect to feasibility, maintenance, and monitoring of Treatment BMPs as set forth in the Caltrans Statewide SWMP.

In addition, impacts to active groundwater wells would be reduced with implementation of Mitigation Measure WQ-4, below.

WQ-4 **Groundwater Wells.** During final design, the RCTC will conduct a detailed review of available well information to locate existing active groundwater wells within the MCP project right of way and coordinate with affected property owners of each well to determine if the well requires relocations. The abandonment procedure for each well will be described in accordance with California Department of Water Resources Standards (Bulletin 74-90), and the abandonment approvals by the agencies with jurisdiction for those wells will be documented.

Any water supply provided by active wells will be replaced by RCTC during construction of the MCP project. Replacement water may be provided by a variety of means, such as installing a new well or by creating a connection to a municipal supply.

In addition to the measures above, a Section 401 and a Section 404 permit will be required from the RWQCB and USACE, respectively. These permits are discussed in Section 3.18, Wetlands and Other Waters.